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EXAMINER

HALIYUR, VENKATESH N

ART UNIT	PAPER NUMBER
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2616

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	02/08/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/039,279

Applicant(s)

YAVATKAR ET AL.

Examiner

Venkatesh Haliyur

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 November 2006.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 and 54-91, (16-53 canceled) is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-15 and 54-91 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Response to Amendment

1. The amendment filed on 11/9/2006 has been considered and is effective to overcome Gridley reference. Hence the rejection of claims 1-15 communicated via office action of 08/04/2006 has been withdrawn. However a new ground(s) of rejection has been made in view of newly discovered reference Subramanian et al. Rejections follow.
2. Claims 1-15, 54-91 are pending in the application. Claims 16-53 are canceled and claims 54-91 are new.

Claim Rejections - 35 USC § 101

3. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

The claimed invention in claims 54-68 is directed to non-statutory subject matter.

Regarding claims 65-68, in claim 65 the phrase "stores instructions for use by a router in processing a packet, the instructions for causing the router to:" and in claims 64-68 the phrase "comprising instructions", do not comply with 101 interim guidelines. In order for a computer program or software instructions to be statutory it must be embodied in a computer readable medium (see page 52 of the 101 Interim Guidelines).

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Thus the claimed application in claims 65-68 is nothing but a software application. It is well established that a software application, i.e. computer program, per se is not physical "thing". The computer program does not define any structural and functional interrelationship between the computer program and the rest of the computer, which permits the computer program's functionality to be realized. Thus claim 65-68 is non-statutory.

Regarding claims 54-64, these claims are written in the form of "method". However as evidenced in claim 65, claims 54-64 are claiming software in the form of method. Note that claim 54 mirrors claim 65 in all respects except for the preamble and in light of the specification it is nothing more than the instructions of the application and therefore is non-statutory.

Thus, claims 54-68 are non-statutory since the patent protection sought by the claimed invention is for the computer program in the abstract.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 1-2,6,10,12-15,54-55,58,61-91, rejected under 35 U.S.C. 102(e) as being anticipated by Subramanian et al. [US Pat: 6,970,943].

Regarding claims 1,69, Subramanian et al in the invention of " Routing Architecture Including A Compute Plane Configured For High Speed Processing of Packets to Provide Application Layer Support" disclosed (**Figs 1-4, col 1,lines 60-67, col 3,lines 10-67, col 4,lines 1-45**) a router (**item 10 of Fig 6**) using a distributed implementation of a routing control protocol to route a packet between a plurality of computer networks (**col 1,lines 60-67, col 2, lines 1-46**), comprising: a control-plane (**control plane, item 12 of Fig 6**) having a control-plane processor (**control processor, item 28 of Fig 6**) to implement a central control portion of the control protocol (**col 4,lines 21-32, col 5, lines 3-13**); a plurality of forwarding-planes (**forwarding planes 1....N, items 16 of Fig 6**), each having a forwarding-plane processor (**item 48 of Fig 6, col 7, lines 28-67**) to implement an offload control portion of the control protocol (**control message processing is separated from computing task, col 2, lines 29-41**) and a plurality of ports (**network interface, items 52 of Fig 6**) to connect the router to the computer networks (**col 6, lines 16-67**); and a back-plane (**switching backplane, item 26 of Fig 6**) to connect the control plane (**item 12 of Fig 6**) to the plurality of forwarding-planes (**items 16 of Fig 6**) and to enable processing of the packet based on an implementation of the control protocol by the control-plane and the forwarding-plane (**col 6, lines 16-67, Fig 5**) [**col 7, lines 1-67, col 8, lines 1-67, col 9, lines 1-33**].

Regarding claims 2,70,55,66,70,80,88, Subramanian et al disclosed that the offload control portion (**control message processing**) of the control protocol generates an outgoing control message [**col 4, lines 21-32, col 5, lines 3-13, col 6, lines 45-57**].

Regarding claim 6,58,67,71,81,89, Subramanian et al disclosed that the offload control portion (**control message processing**) of the control protocol responds to an incoming request to the control protocol (**col 4, lines 21-32, col 6, lines 45-65, Figs 4-5**).

Regarding claim 10,61,72,78,86, Subramanian et al disclosed that the control-plane and the forwarding-plane together implement a plurality of control protocols (**Fig 5, col 5, lines 3-41,col 6, lines 16-65,**).

Regarding claim 12,73,82, Subramanian et al disclosed that the plurality of ports include a plurality of virtual interfaces (**RTP over UDP port**) on a physical interface (**col 2, lines 5-46,col 3, lines 29-42, col 5, lines 25-41**).

Regarding claim 13,68,74,83,90, Subramanian et al disclosed that the forwarding-plane processor includes: a processing engine (**Forwarding rules/filter, item 50 of Fig 6**) to implement a plurality of packet processing functions for routing the packet (**item 48 of Fig 6, col 7, lines 28-67**); and a general purpose processor (**compute plane processors, item 36 of Fig 6**) to implement the offload control portion of the control protocol (**col 3, lines 54-61, Fig 3**).

Regarding claims 14-15, 63-64,75-76,84,91,Subramanian et al disclosed that the off-load control portion of the control protocol operates to reduce a control flow load on the back-plane between the control-plane (**Fig 5, col 6, lines 16-65**) and the forwarding

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plane (**col 8, lines 1-26**) and also to reduce a processing load on the control-plane processor (**col 2, lines 29-41, col 8, lines 49-67, col 9, lines 1-24**).

Regarding claims 54,65,69, Subramanian et al disclosed a method of processing a packet between two or more computer networks using a distributed implementation of a control protocol (**col 1, lines 60-67, col 2, lines 1-46**), comprising: implementing a central control portion of a control protocol in a control-plane (**control plane, item 12 of Fig 6**) of a router (**item 10 of Fig 6**) and an offload control portion of the control protocol in a forwarding-plane (**forwarding plane, item 16 of Fig 6**) of the router (**col 4, lines 21-32, col 5, lines 3-13**), the control-plane and forwarding plane being connected to each other by a back-plane (**switching back plane, item 26 of Fig 6**); and processing the packet based on an implementation of the control protocol by the control-plane and the forwarding-plane (**col 6, lines 16-67**) [**col 7, lines 1-67, col 8, lines 1-67, col 9, lines 1-33, Figs 3-5**].

Regarding claims 77,85, Subramanian et al disclosed a control-plane (**control plane, item 12 of Fig 6**) for a router (**item 10 of Fig 6**) using a distributed implementation of a routing control protocol to route a packet (**col 1, lines 60-67, col 2, lines 1-46**), comprising: a control-plane processor (**control processor, item 28 of Fig 6**) to implement a first control portion of the control protocol and interact with a plurality of forwarding-planes (**forwarding planes 1....N, items 16 of Fig 6**), which implement a second control portion of the control protocol, to enable processing of the packet by the router (**col 4, lines 21-32, col 6, lines 16-65, Fig 5**).

Regarding claim 79,87, Subramanian et al disclosed a forwarding-plane **(forwarding plane, item 16 of Fig 6)** for a router **(item 10 of Fig 6)** using a distributed implementation of a routing control protocol to route a packet **(Fig 5)**, comprising: a forwarding-plane processor **(forwarding processor, item 48 of Fig 6)** to implement an offload control portion of the control protocol **(col 2, lines 29-41)** and interact with a control-plane **(control plane, item 12 of Fig 6)**, which implements a central control portion of the control protocol, to enable processing of the packet by the router **(col 4, lines 21-32, col 6, lines 16-65, Fig 5)**.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 3-5,7-9,11,56-57,59-60,62 rejected under 35 U.S.C. 103(a) as being unpatentable over Subramanian et al. [US Pat: 6,970,943] in view of Reeves et al. [US 2002/0071390].

Regarding claims 3,7,56,59,60, Subramanian et al. in the invention of " Routing Architecture Including A Compute Plane Configured For High Speed Processing of Packets to Provide Application Layer Support" disclosed the router **(item 10 of Fig 6)** and methods for processing plurality of control protocols and messages **(col 5, lines 3-**

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41), but fails to disclose that control protocol is OPEN SHORTEST PATH FIRST (OSPF) protocol and outgoing control message is a HELLO message, the incoming request is a LSA request message and the incoming request is a link status request message. However, Reeves et al in the invention of "System and Method for Establishing a Communication Path Associated with an MPLS Implementation on an ATM Platform" disclosed MPLS routing system (**Fig 5, para 0006, 0038-0059**) for processing plurality of control protocols and messages including OSPF (**para 0048**) protocol and to send or receive HELLO messages for session establishment (**para 0088-0089**) and the incoming request is a link status request messages (**para 0065**). Therefore it would have been obvious for one of ordinary in the art at the time the invention was made to include OSPF protocol and to send or receive HELLO and link status request messages as taught by Reeves et al. in the system of Subramanian et al. to process OPEN SHORTEST PATH FIRST (OSPF) protocol and outgoing HELLO control message, incoming LSA request message and link status request messages. One is motivated as such in order to increase the throughput of forwarding plane processor by offloading OSPF control message processing to control plane during session establishment, maintenance and termination of data paths.

Regarding claims 4-5,8-9,11,57,62, Subramanian et al. disclosed the router (**item 10 of Fig 6**) processing plurality of control protocol including RESOURCE RESERVATION (RSVP) protocol and associated RESV and PATH messages (**col 5, lines 3-63**) for path establishment, but fails to disclose the router processing OSPF, INTRA-DOMAIN INTERMEDIATE SYSTEM TO INTERMEDIATE SYSTEM ROUTING

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PROTOCOL (ISIS) control protocols and the associated outgoing control message is a HELLO message and the incoming request message is a HELLO request. However, Reeves et al disclosed MPLS routing system (**Fig 5, para 0006, 0038-0059**) for processing plurality of control protocols and messages including OSPF, ISIS (**para 0048**) protocol and to send or receive HELLO messages for session establishment (**para 0088-0089**) and the incoming request is a link status request messages (**para 0065**). Therefore it would have been obvious for one of ordinary in the art at the time the invention was made to include OSPF, ISIS protocols and to send or receive HELLO messages as taught by Reeves et al. in the system of Subramanian et al. to process OSPF, ISIS control protocol messages and outgoing HELLO control messages. One is motivated as such in order to increase the throughput of forwarding plane processor by offloading OSPF, RSVP, ISIS control message processing to control plane during session establishment, maintenance and termination of data paths.

Response to Arguments

8. Applicant's arguments with respect to claims 1-15 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

9. Any inquiry concerning this communication or earlier communications should be directed to the attention to Venkatesh Haliyur whose phone number is 571-272-8616. The examiner can normally be reached on Monday-Friday from 9:00AM to 5:00 PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wing Chan can be reached @ (571)-272-7493. Any inquiry of a general

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nature or relating to the status of this application or proceeding should be directed to the group receptionist whose telephone number is (571)-272-2600 or fax to 571-273-8300.

10. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197(toll-free).

Venkatesh Haliyur
Patent Examiner

UH
2/1/07


WING CHAN
SUPERVISORY PATENT EXAMINER